DEFENSE INFORMATION INFRASTRUCTURE (DII)

COMMON OPERATING ENVIRONMENT(COE)

DISTRIBUTED COMPUTING ENVIRONMENT SERVER (DCES)
Segment v1.0.0.5
Installation Instructions for Solaris Operating System 2.5.1

December 09, 1996

Purpose

These instructions are for installing and configuring the Distributed Computing Environment Server (DCES) segment. These instructions provide valuable information to correctly use and configure a robust DCE cell.

References

- Transarc DCE 1.1 Release Notes for Solaris version 2.5[1]
- Transarc DCE Administration Guide: Core Components
- Transarc DCE 1.1 Command Reference
- Transarc DCE 1.1 Command Reference Supplement
- Transarc DCE Installation and Configuration Guide

What You Will Need During DCES Installation

- The DCE Client Segment must be installed prior to configuring the DCES segment.
- The root password. The Transarc **dcesetup** commands used in the installation of DCES require the root password.
- The cell administrator's password. The Transarc **dcesetup** commands and other scripts created for the purpose on installing DCES will prompt for the cell administrator's password..
- Familiarity with the COE Installer.

Machine Requirements

Total Memory: 32MB RAM (64MB RAM recommended)
Available Swap Space: 64MB

New Features in the DCE Server Segment

- The DCES installation installs both the Security server and the CDS server, but does not configure these services unless selected from the DCE Configuration Menu.
- The Transarc DCE Patch 5 is installed during the installation process. If a higher patch is already installed, no action is taken and a warning is displayed.
- Configuration of the DCE/DFS client can be done through the DCE Server Configuration Menu.
- On-line help and guidance is available before any configuration takes place.
- Ability to view current DCE configuration.
- The CDS root directory version will be automatically upgraded to version 4.0 when configuring the first CDS in the cell.
- During DCE client configuration the **dced** is restarted with the **-x** option and the *setup_state* file is modified accordingly.

[1] Transarc DCE 1.1 Upgrade and Release Notes for Solaris Version 2.5, dated April 1996, state "Support for Solaris 2.5.1 is not included as part of this release." This is INCORRECT. Transarc DCE for Solaris 2.5 will operate normally on a Solaris 2.5.1 machine.

- Configuration of the NFS/DFS Gateway occurs more smoothly in a cell that does not contain any DFS servers.
- Recommended DII security policies can be set in the Utilities Menu.
- When registry policies are set, the *passwd_override* Extended Registry Attribute is added to the cell administrator principal to prevent him/her from being locked out of the system due to an expired password.
- An option in the Utilities Menu to populate a newly created CDS with a replica of every directory in the CDS namespace.
- An option in the utilities Menu to set a **cron** job which will purge expired DCE credentials every 8 hours.

De-Installation of DCES

The DCES segment cannot be de-installed using the COE Segment Installer. Please read the DCES segment release notes for instructions on how to successfully de-install.

Explanation of the DCE Server Configuration Menu:

The DCE Configuration Menu appears during the installation of DCES, but it can be accessed at any time through the **Network | DCE** menu. After installation, you should logout and log back into the machine for the changes to the sysadmin menu to take effect.

The COE will automatically install the DCE Security Server and DCE Cell Directory Server (CDS). After the installation, you will be prompted to configure the DCE servers. The DCE Configuration menu makes heavy use of Transarc's **dcesetup** command. If you feel you are sufficiently experienced with DCE, you may elect to configure the servers using the Transarc commands. If you choose not to use the DCE Configuration Menu, you should familiarize with the new features mentioned above.

```
***  DCE SERVER CONFIGURATION MENU on sulu  ***

     1) View Current DCE Configuration
     2) Configure Security Server
     3) Configure Cell Directory Server
     4) Configure Time Server
     5) Configure DCE/DFS Client
     6) Utilities and Further Configuration Options

    99) EXIT

 Please Enter Your Selection and Press <RETURN>
```

View Current DCE Configuration
This option displays all the possible DCE configurations, tests whether the component is installed, and determines which DCE components are configured and which are not. This option uses the Transarc **dcesetup info** command. The output is for the local machine only.

Configure Security Server
This option executes the **dcesetup config_secserver** command which is used configure a master or slave security server. Configuring a master security server is the first step in creating a new cell.

Configure Cell Directory Server
This option configures a CDS using the **dcesetup config_cdsserver** command. This option is used to configure an initial and/or replica CDS server. You should configure and initial CDS immediately after configuring the master security server.

If you configure the initial CDS, the root directory ***/.:*** will be upgraded to version 4.0 as recommended in the Transarc DCE Administration Guide.

If you use this option to configure a secondary CDS server, you should immediately populate it with option 3 of the Utilities Menu, "`Populate a CDS with Read-Only Replicas.`"

Configure Time Server

This option uses the **dcesetup config_dtsserver** command to configure a DTS servers. Each cell must have at least one time server, three are recommended.

Configure DCE/DFS Client
This option allows you to configure a DCE/DFS client. This option should be selected after configuring the master security server, initial CDS, and DTS time server. In addition to using the **dcesetup config_client** command, this option restarts the **dced** daemon with the **-x** option and makes changes to the */opt/dcelocal/etc/setup_state* file. If you previously configured this machine as a time server, do not configure the machine as a DTS clerk. Doing so would negate the your previous DTS configuration. The Distributed Time Service, unlike the Security Service and Cell Directory Service, can be re-configured without having to unconfigure all the components on the machine.

Utilities and Further Configuration Options
Selecting this option takes you to the DCE Utilities Menu.

EXIT
Exit DCE Configuration Menu.

Explanation of the DCE Utilities Menu

```
***  DCE UTILITIES MENU on sulu  ***

 1) Configure NFS to DFS Gateway
 2) Set Security Registry Policies
 3) Populate a CDS with Read-Only Replicas
 4) Set CRON Job to Delete Expired DCE Credentials
 5) Unconfigure DCE/DFS

98) RETURN TO PREVIOUS MENU
99) EXIT

Please Enter Your Selection and Press <RETURN>
```

Configure NFS to DFS Gateway
This option executes a modified version of the Transarc **dcesetup config_dfsgwserver** command. This modified version first checks for the existence of the *subsys/dce/dfsgw-admin* group. If it does not exist, it is created and continues with the configuration of the NFS/DFS Gateway. The machine must be configured as a DFS client before it can be configured as a Gateway server.

Set Security Registry Policies
Selecting this option shows you the current DCE Registry Policies being used. If you chose to continue the following policies will be changed:

- Passwords cannot consist of all spaces.
- Password life-span is set to 180 days.
- Password minimum length is set to 8 characters.

- Passwords can consist of alphanumeric characters. Passwords do not have to contain special characters.
- Maximum ticket lifetime is set to 6 hours.
- The *passwd_override* extended registry attributed is added to the cell administrator's principal to prevent him/her from being locked out due to an expired password.

Populate a CDS with Read-Only Replicas
This option applies primarily to machines configured as secondary CDS servers. This option does not apply to the machine configured as the initial CDS. Continuing will populate a new clearinghouse on this machine with a read-only replica of every directory in the CDS namespace of the local cell.

Set CRON Job to Delete Expired DCE Credentials
Continuing will modify the */var/spool/cron/crontabs/root* such that the Transarc **kpurge** command will be executed every 8 hours. The **kpurge** command removes expired DCE credentials.

Unconfigure DCE/DFS
This option unconfigures all the DCE/DFS components on the machine using the **dcesetup unconfig** command.

RETURN TO PREVIOUS MENU
Selecting this option takes you back to the Main Menu.

EXIT
Exit DCE Configuration Menu.

Useful Commands to Validate DCE Configuration

dce.ps
Perhaps the most useful Transarc DCE command which lists all DCE and DFS daemons running on a machine. Below is our sample output followed by an explanation of which daemons to look for.

```
% dce.ps
DCE daemons
F S   UID   PID PPID C PRI NI     ADDR    SZ    WCHAN TTY TIME COMD
8 S     0  1371    1 0  40 20 f5edccd0  1969 f5edd2d8 ?   5:21 dced
8 S     0  4063    1 0  40 10 f5ebf988  1971 ee220ea4 ?   1:55 secd  Sec Server
8 S     0  4151    1 0  40 20 f64d3330  2107 f64fb626 ?   4:17 cdsd  CDS Server
8 S     0   984    1 0  39 20 f5edc670  1785 f5f47f26 ?   0:05 cdsadv
8 S     0  4204    1 0  40 20 f64d2cd0  1910 f64d32d8 ?   2:32 gdad
8 S     0  5637    1 0  40 20 f6641998  1680 f6641fa0 ?   0:34 dtsd  DTS

NOT_RUNNING: secd pwd_strengthd cdsd gdad dts_ dtstimed auditd nsid

DFS daemons
F S UID PID PID PRI NI     ADDR    SZ   WCHAN TTY TIME COMD
(output not shown)
```

```
License daemons
F S   UID   PID  PPID  C PRI NI     ADDR     SZ    WCHAN TTY      TIME COMD
(output not shown)
```

The dce_login command

The **dce_login** command validates a principal's identity and obtains the principal's network credentials.

```
# dce_login cell_admin
Enter Password:
```

The kinfo command

After logging into DCE, the **kinfo** command can be used to verify your DCE identity.

```
# kinfo
Identity Expiration: Mon Nov 25 16:12:52 1996

Realm:          /.../gccs.smil.mil
Identity:       cell_admin
Primary Group:  none

Groups:         none
                acct-admin
                subsys/dce/sec-admin
                subsys/dce/cds-admin
                subsys/dce/dts-admin
                subsys/dce/audit-admin
                subsys/dce/dced-admin
                subsys/dce/dfs-admin      (Cells with DFS configured only.)
                subsys/dce/dfsgw-admin    (Cells with DFS configured only.)
```

The dcecp dts show command

The following command was executed on a DTS client machine. It provides valuable information, such as when the last time the client synchronized, `last time polled`, with a DTS server.

```
# dcecp -c dts show
{tolerance +0-00:05:00.000I-----}
{tdf -0-05:00:00.000I-----}
{maxinaccuracy +0-00:00:00.100I-----}
{minservers 1}
{queryattempts 3}
{localtimeout +0-00:00:05.000I-----}
{globaltimeout +0-00:00:15.000I-----}
{syncinterval +0-00:10:00.000I-----}
{type clerk}
{clockadjrate 10000000 nsec/sec}
{maxdriftrate 1000000 nsec/sec}
{clockresolution 10000000 nsec}
{version V1.0.1}
{timerep V1.0.0}
{autotdfchange no}
{nexttdfchange 1997-04-06-03:00:00.000-04:00I0.000}
{status enabled}
```

```
{localservers
 {name /.../gccs.smil.mil/hosts/spock/self}
 {timelastpolled 1996-11-25-10:06:27.587-05:00I-----}
 {lastobstime 1996-11-25-10:06:27.492-05:00I-----}
 {lastobsskew +0-00:00:00.095I-----}
 {inlastsync TRUE}
 {transport RPC}}
```

The dcecp cell ping command

The **cell ping** command performs a quick check to test if the cell is running. If no options are given the command pings the master security server, any CDS servers that house a master directory replica and all DTS servers.

```
# dcecp -c cell ping
DCE services available
```

The **-replicas** option will cause the command to ping each security and CDS server, both master and replica, as well as all DTS servers.

```
# dcecp -c cell ping -replicas
DCE servers available
```

The **-clients** option will cause the command to ping every machine in the cell.

```
# dcecp -c cell ping -clients
DCE clients available
```

The cell show command

The **cell show** command returns attributes describing the configuration of the specified cell. In the following example, we have two machines in the cell. *Spock* is the master security server, a CDS server and DTS server. *Sulu* is a replica security server and a CDS server.

```
# dcecp -c cell show
{secservers
 /.../gccs.smil.mil/subsys/dce/sec/sulu_slave
 /.../gccs.smil.mil/subsys/dce/sec/master}
{cdsservers
 /.../gccs.smil.mil/hosts/spock
 /.../gccs.smil.mil/hosts/sulu}
{dtsservers
 /.../gccs.smil.mil/hosts/spock
 /.../gccs.smil.mil/hosts/sulu}
{hosts
 /.../gccs.smil.mil/hosts/spock
 /.../gccs.smil.mil/hosts/sulu}
```

The fact that *sulu* is listed under dtsservers is incorrect and misleading. The **cell show** command should not be used determine the DTS servers in a cell. Use **dts catalog** to determine which machines in the cell are DTS servers.

```
# dcecp -c dts cat
/.../gccs.smil.mil/hosts/spock/dts-entity
```

The cdsrepl lsreplicas command

This command lists replication information about directories in the CDS namespace. The **-r** option stands for recursive. Recall, our cell has two CDS servers, *spock* and *sulu*. Also this command was executed after selecting option 3 of the Utilities Menu, "Populate a CDS with Read-Only Replicas." The **lsreplicas** command displays useful information about where directory replicas are stored and when they were last updated.

```
# cdsrepl lsreplicas /.:/ -r
/.../gccs.smil.mil:
Convergence: medium
Last Successful Skulk:  Nov 25 09:28
Last Attempted Skulk:   Nov 25 09:28
Last Update:            Nov 25 09:28

Replicas:
        /.../gccs.smil.mil/spock_ch (master)
        /.../gccs.smil.mil/sulu_ch (read only)

/.../gccs.smil.mil/hosts:
Convergence: medium
Last Successful Skulk:  Nov 24 23:28
Last Attempted Skulk:   Nov 24 23:28
Last Update:            Nov 25 08:28

Replicas:
        /.../gccs.smil.mil/spock_ch (master)
        /.../gccs.smil.mil/sulu_ch (read only)

/.../gccs.smil.mil/hosts/spock:
Convergence: medium
Last Successful Skulk:  Nov 24 23:28
Last Attempted Skulk:   Nov 24 23:28
Last Update:            Nov 25 08:28

Replicas:
        /.../gccs.smil.mil/spock_ch (master)
        /.../gccs.smil.mil/sulu_ch (read only)

/.../gccs.smil.mil/hosts/sulu:
Convergence: medium
Last Successful Skulk:  Nov 24 23:28
Last Attempted Skulk:   Nov 24 23:28
Last Update:            Nov 25 08:28

Replicas:
        /.../gccs.smil.mil/spock_ch (master)
        /.../gccs.smil.mil/sulu_ch (read only)

/.../gccs.smil.mil/subsys:
Convergence: medium
Last Successful Skulk:  Nov 25 10:28
Last Attempted Skulk:   Nov 25 10:28
--More--
Last Successful Skulk:  Nov 25 10:28
Last Attempted Skulk:   Nov 25 10:28
Last Update:            Nov 25 08:28
```

(Further output omitted.)